Recharge on Non-irrigated Lands

ESHMC 6 March 2008

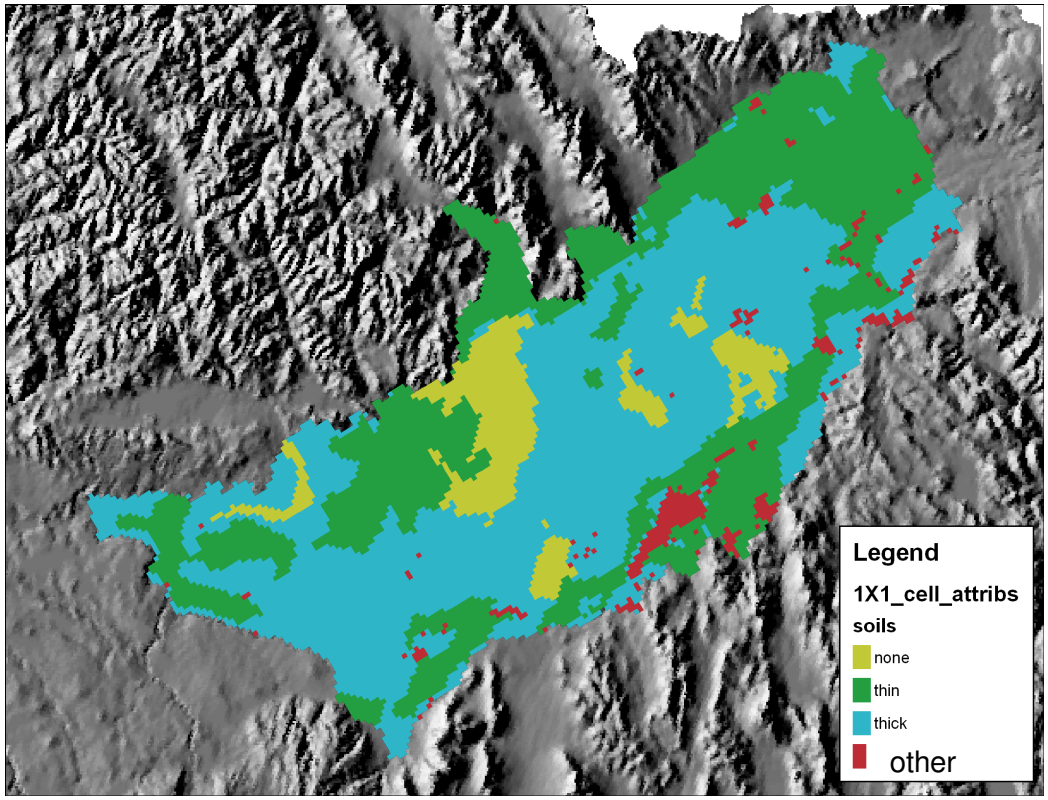
B. Contor

Outline

- Review of ESPAM1.1
- Issues w/ ESPAM1.1
- PESTibility
- Review of Allen-Robison daily calculations
- Implementation issues
- Recommendation

Review of ESPAM1.1

- 4 general soil classes
  - lava rock
  - thin soil
  - thick soil
  - other
    - wetlands
    - open water
    - urban/industrial
    - dry farm



Review of ESPAM1.1

- 2 algorithms
  - precip-based non-linear calculation
    - lava, thin, thick
  - fixed rate based on literature
    - other
- Calculated off-line and supplied to Recharge Tool as one raster/stress pd.

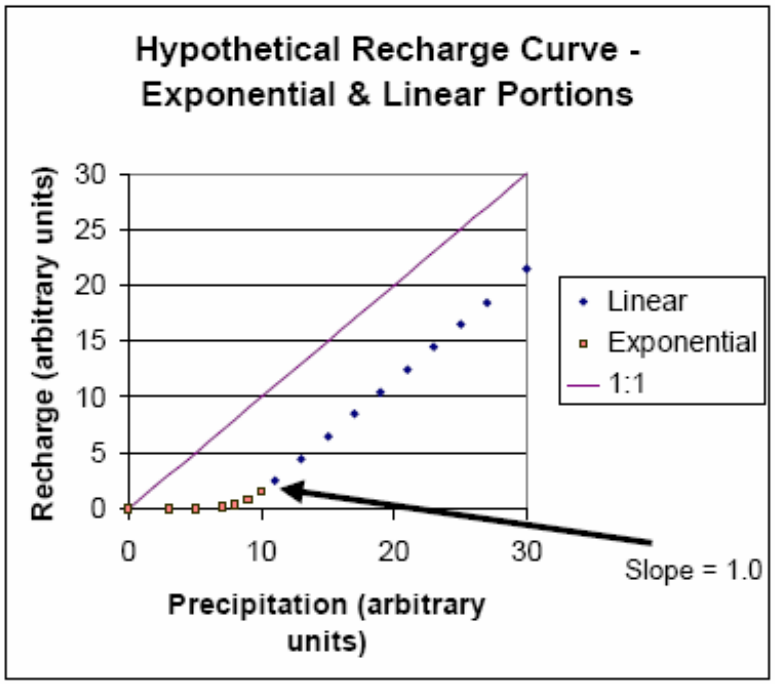
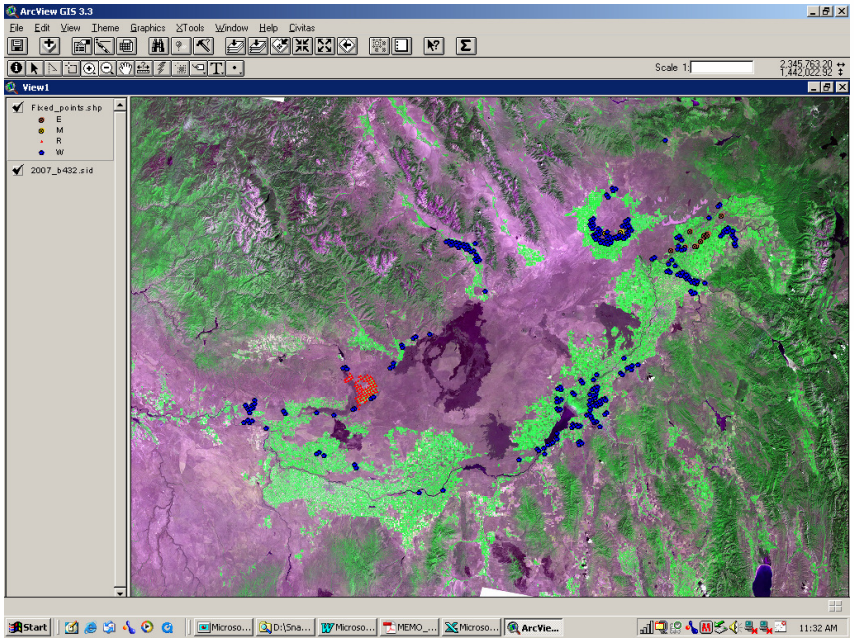


Figure 1. Hypothetical Recharge Curve

Issues with ESPAM1.1

- No allowance for precip patterns
- Wetlands issues



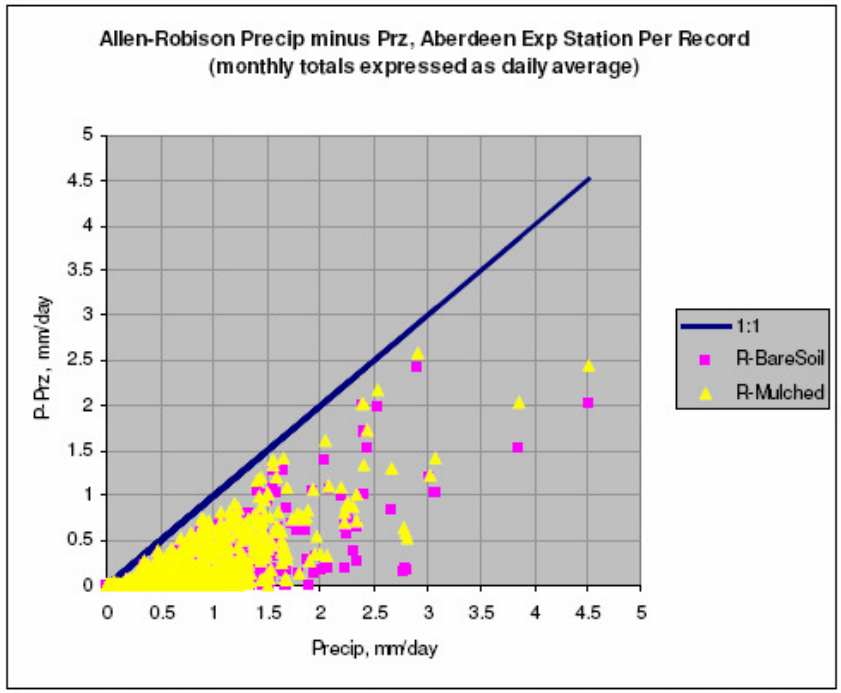
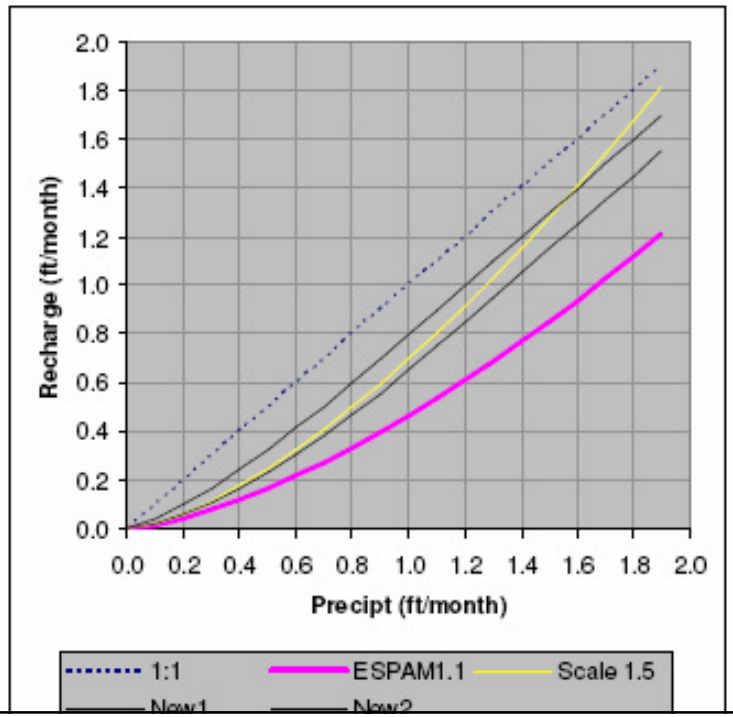
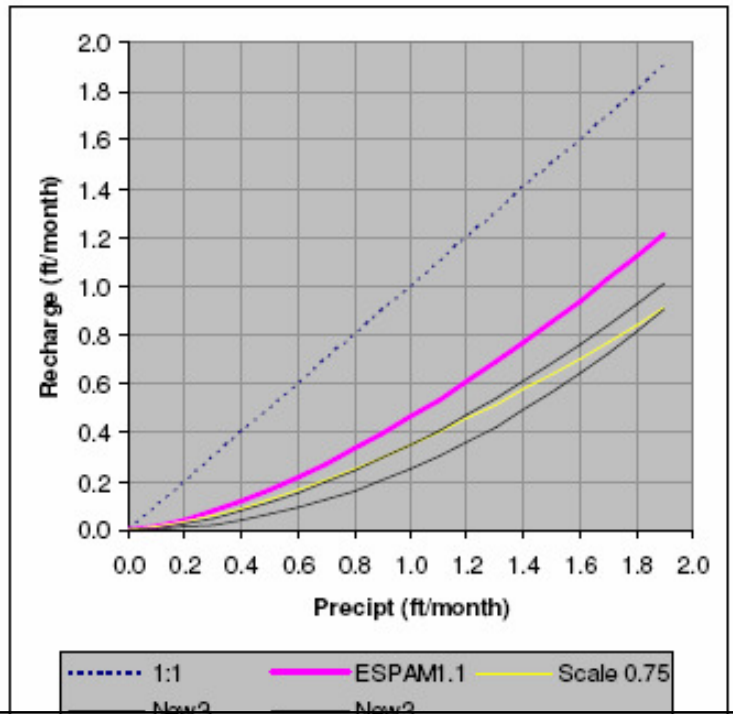


Figure 4. Allen-Robison data for bare soil and mulched soil.

PESTibility: Two Options

- Status quo (multiplier)
  - Fast
  - Flexible (change algorithms easily)
- Let PEST touch algorithm parameters
  - polygon-size issues
  - requires tool mods



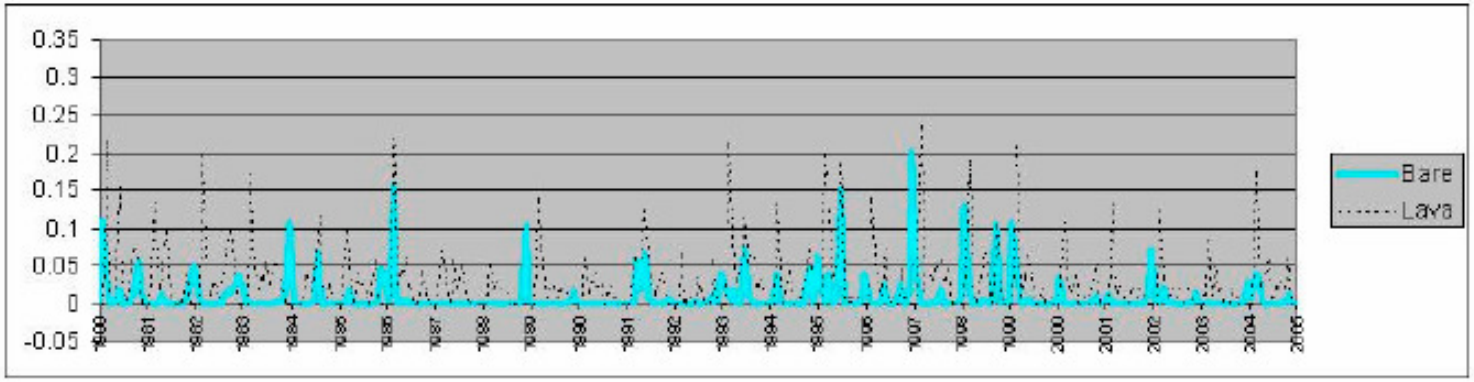


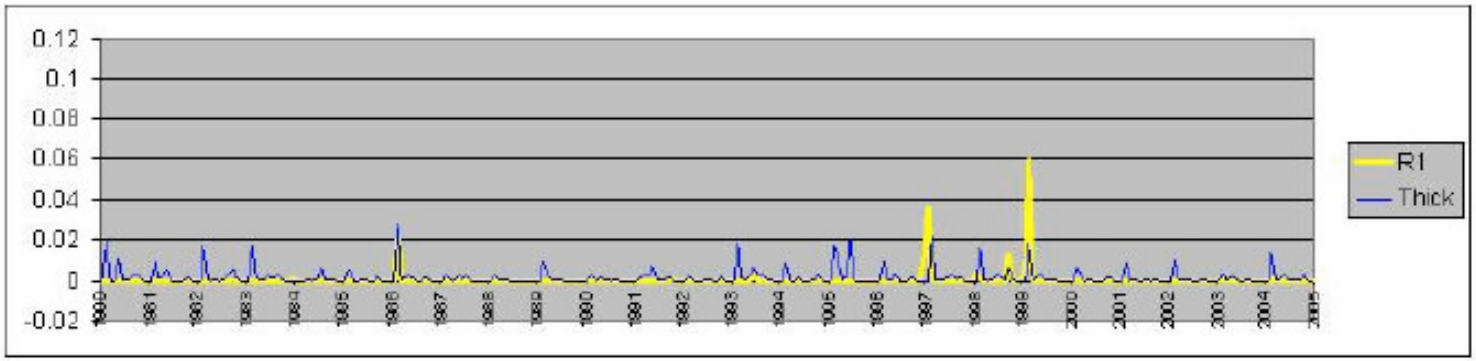
PESTibility: Allan's Experiments

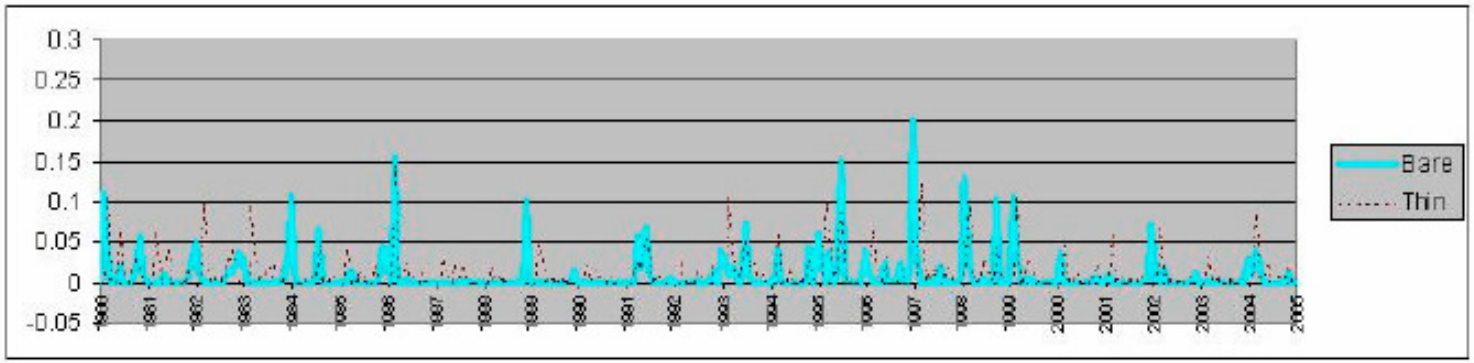
- Does it help?
- Is the multiplier algorithm adequate?
- What sorts of adjustments does PEST want to make?
- Are we blundering down the primrose path of non-uniqueness?

(Break for Allan's report)

Allen-Robison Daily Calculations







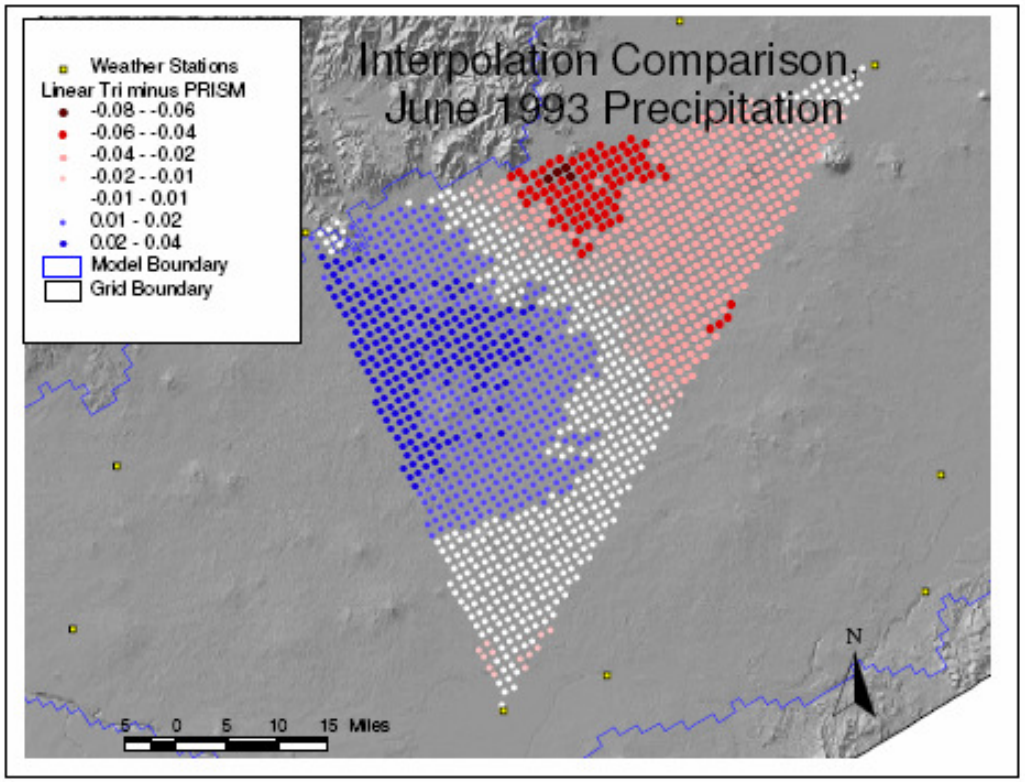
P - Prz

(precip minus precip stored in root zone)

(should it be P - Prz - ET?)

A-R Implementation Issues

- December 2005
- Interpolation



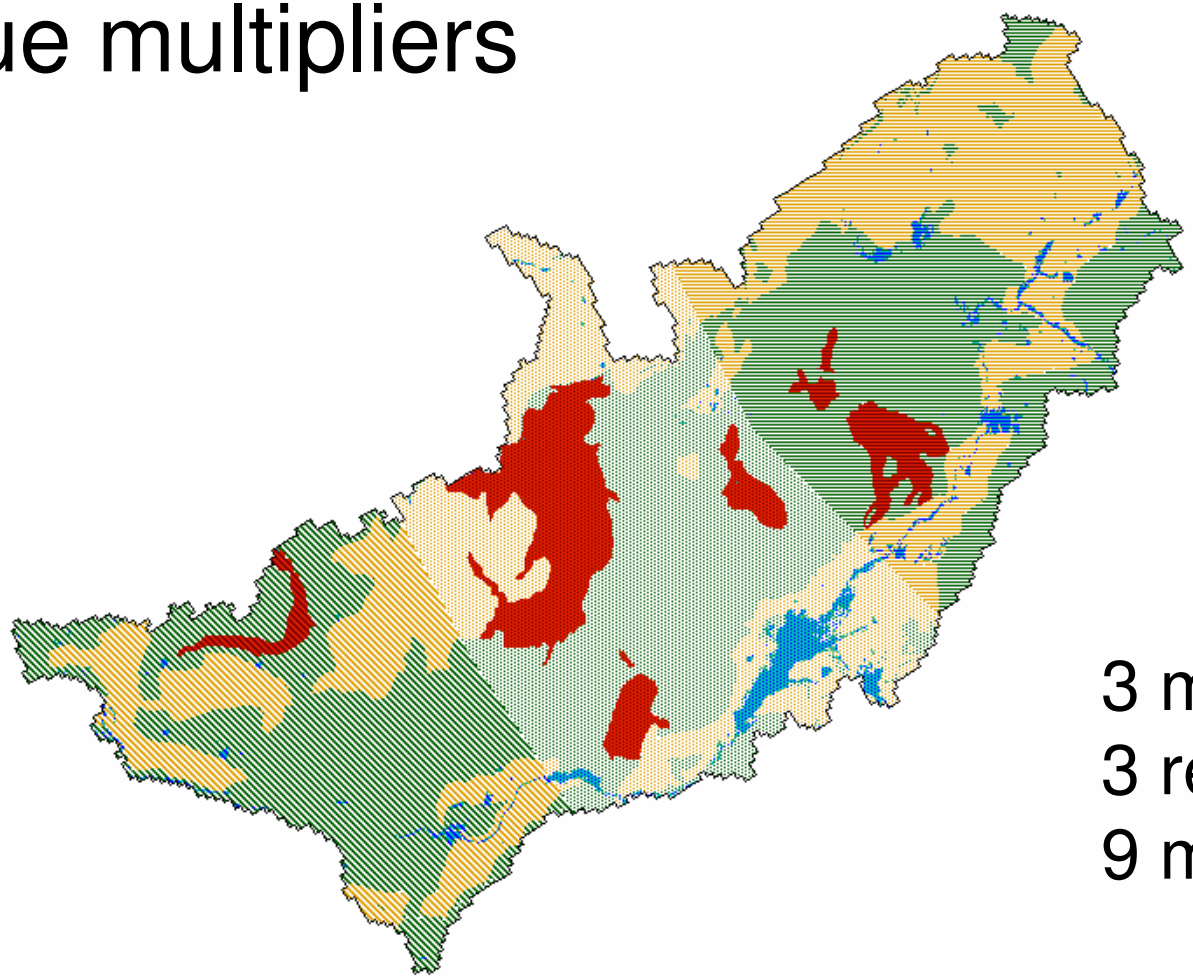
(pcp 0.14 - 0.29 ft)

Recommendation

- Use fixed points for minor uses
  - more straightforward than correction points
  - Use Allen-Robison wetlands/open water
  - Use ESPAM1.1 urban/industrial
  - Eliminate dry farm category (use thick soil)

Recommendation

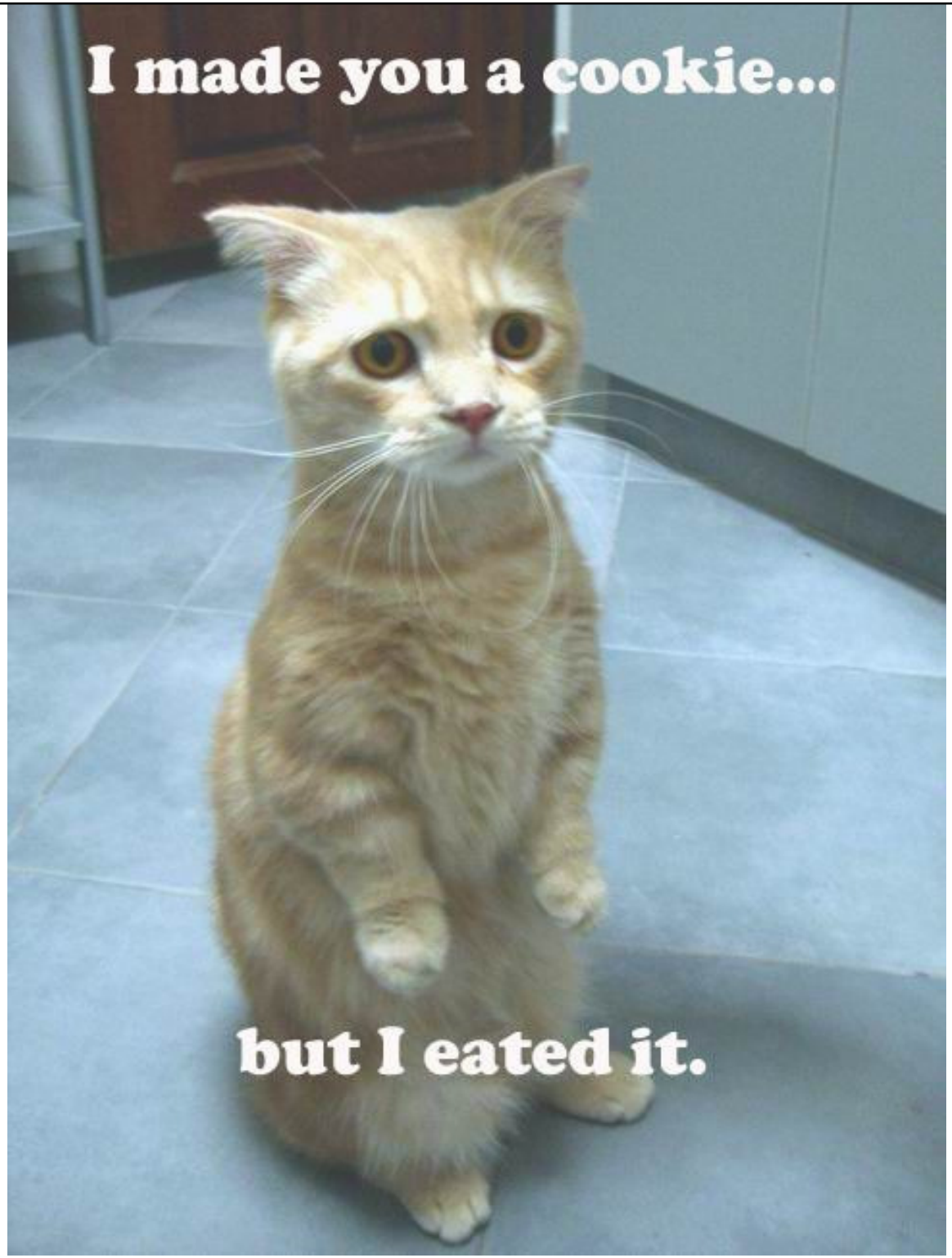
- Modify tool for more spatial regions w/ unique multipliers



3 main classes x
3 regions =
9 multipliers

Recommendation

- Retain "off-line" calculation
  - flexibility
  - speed
  - simplicity
- Retain ESPAM1.1 algorithm
  - not limited to 2005
  - take advantage of PRISM spatial interpolation



(courtesy David Hibbert)